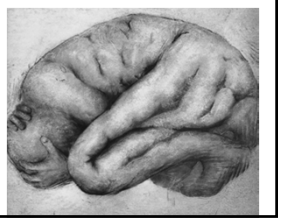
The Impact of Social Neuroscience on Moral Philosophy

Patricia Churchland
Philosophy

UC San Diego &
Salk Institute



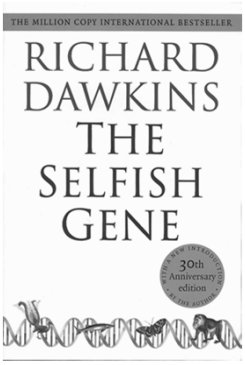
DEEPEST LEVEL OF VALUE

Brainstem & limbic system

emotional and motivation systems for survival & well-being

ME

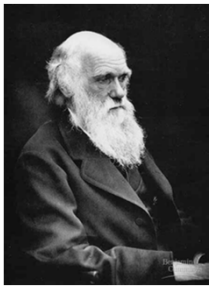
Life-value

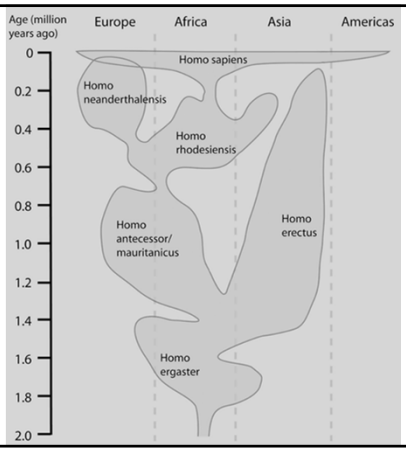


"Let us try to teach generosity and altruism, because we are born selfish."

Darwin: our moral sense or conscience
- **social instincts**
- **habits & skills**
- **reason**

Aristotle
David Hume
Adam Smith





Mencius
385-303BC

Confucius
551-479 BC

Two Traditions

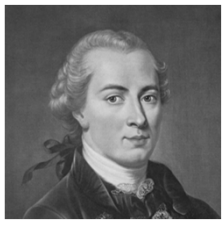
Legal Model

Moses
Kant
Aquinas
Bentham
……

Skill Model

Aristotle
Confucius
Hume
Smith
Darwin
…..

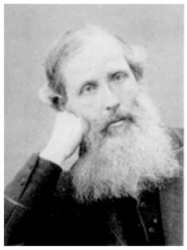
Immanuel Kant
1724-1804



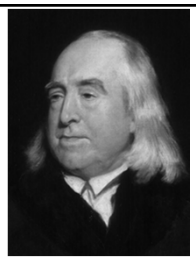
Foundational Rule/Test

is the proposal
rationally
universalizable ??

Requires a radically Free will



Henry Sidgwick
1838-1900

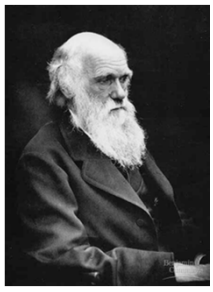


Jeremy Bentham
1748-1832

Maximize aggregate utility

Darwin: our moral sense or conscience
- **social instincts**
- **habits & skills**
- **reason**

Aristotle
David Hume
Adam Smith



Nonhuman Social Behavior

Neuroendocrinology & Sociality

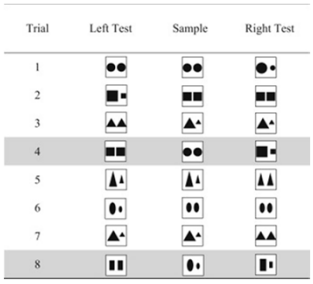
Basal Ganglia: Skills & Habits

Genetics & Brain Evolution

Hippocampus & offline prediction*

ethology

reconciliation, prosocial choice, orphan adoption, empathy, punishment, fairness, self-control, cooperation, reasoning



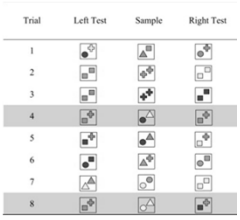


Figure 3 Examples of Identity and Relational Trials across Eight Exemplary Trials for Color Stimuli On three-fourths of the trials (1–3 and 5–7), the correct test stimulus was an identity match to the sample in color. On one-fourth of the trials (4 and 8,...

Anna Smirnova , Zoya Zorina , Tanya Obozova , Edward Wasserman

Crows Spontaneously Exhibit Analogical Reasoning

Current Biology, Volume 25, Issue 2, 2015, 256 - 260

http://dx.doi.org/10.1016/j.cub.2014.11.063

neuroendocrinology

Evolution of homeotherms

Trade off:
Learning capacity ⇧

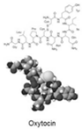
Newborn Independence ⇩

HIGHLY SOCIAL MAMMALS:

Hypothesis

- **Sociability: basic value for social mammals: *natural selection***
- **Hub: *oxytocin & opiods***
- **Norms emerge from reward system**

neuroendocrinology



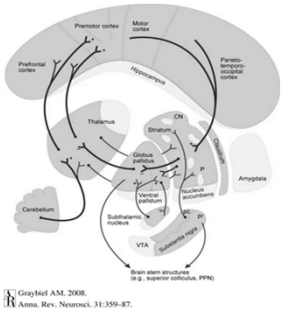
Prairie voles

OTR in nucleus accumbens linked to rewarding aspects of bonding.

Anacker & Beery 2013

Meadow Voles

basal ganglia, thalamus, cortex, hippocampus

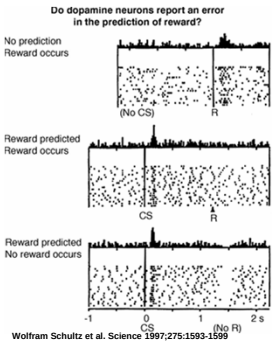


Graybiel AM. 2008. Annu. Rev. Neurosci. 31:359–87.

Fig. 1. Changes in dopamine neurons' output code for an error in the prediction of appetitive events.

VTA

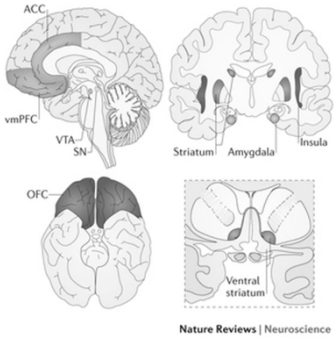
Wolfram Schultz
1997



Wolfram Schultz et al. Science 1997;275:1593-1599

Science AAAS

Published by AAAS



Ruff & Fehr 2014

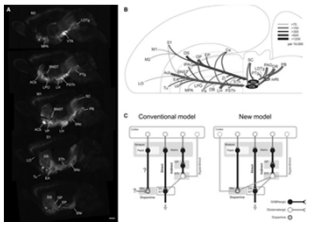


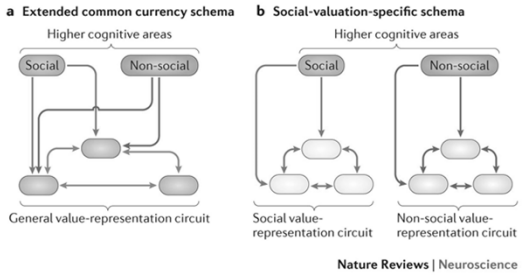
Figure 8 Summary of the Connectivity (A) Direct comparison of the distributions of monosynaptic inputs to VTA and SNc dopamine neurons. SADΔG-EGFP(EnvA) and SADΔG-mCherry(EnvA) were injected into VTA and SNc, respectively. Cyan: VTA targeted. Red: SNc tar...

Mitsuko Watabe-Uchida , Lisa Zhu , Sachie K. Ogawa , Archana Vamanrao , Naoshige Uchida

Whole-Brain Mapping of Direct Inputs to Midbrain Dopamine Neurons

Neuron, Volume 74, Issue 5, 2012, 858 - 873

http://dx.doi.org/10.1016/j.neuron.2012.03.017



Ruff & Fehr 2014

Social Problem Solving

Practical problems, constrained by features of body and brain.

Two Traditions

Legal Model

Moses
Kant
Aquinas
Bentham
……

Skill Model

Aristotle
Confucius
Hume
Smith
Darwin
…..

Moral Norms & Values

Not supernatural
Not esoteric or Platonic
Not unconditional
Ancient evolutionary roots